

In the Office Action, the Examiner: rejected claims 7-9 and 35-37 under 35 U.S.C. § 102(e) as being anticipated by Nguyen et al. (U.S. Patent No. 6,043,164); rejected claims 29-34 under 35 U.S.C. § 102(e) as being anticipated by Nguyen et al.; rejected claims 18-28 and 38-40 under 35 U.S.C. § 102(e) as being anticipated by Yang et al. (U.S. Patent No. 6,218,084); and rejected claims 10-17 under 35 U.S.C. § 103(a) as being unpatentable over Yang et al. in view of Nguyen et al.

Applicant respectfully requests reconsideration and withdrawal of the rejections set forth in the above-identified Office Action.

REJECTIONS UNDER 35 U.S.C. § 102(e)

In the Office Action, the Examiner rejected claims 7-9 and 35-37 under 35 U.S.C. § 102(e) as being anticipated by Nguyen et al. Applicant respectfully notes that this rejection is rendered moot by the cancellation of claims 7-9 and 35-37.

The Examiner rejected claims 29-34 under 35 U.S.C. § 102(e) as anticipated by Nguyen et al., according to the rationale discussed on page 3 of the Office Action. Applicant respectfully notes that the rejection of claims 29-31 is rendered moot by the cancellation of claims 29-31. Applicant, however, respectfully traverses the Examiner's rejection of claims 32-34.

Each of claims 32-34 is drawn to a different combination of method steps that is patentable over the teachings of Nguyen et al. In particular, independent claim 32 recites a combination including, among other things, "applying a second biasing power level equal to zero, after ashing with the first biasing power level."

The Examiner has failed to specifically point out where in the cited reference there is any teaching or suggestion of the claimed method step of "applying a second

biasing power level equal to zero, after ashing with the first biasing power level.” In fact, Nguyen et al. does not disclose a method step of “applying a second biasing power level equal to zero.” At least for this reason, Nguyen et al. fails to anticipate claims 32-34. Thus, reconsideration and withdrawal of this rejection is respectfully requested.

The Examiner rejected claims 18-28 and 38-40 under 35 U.S.C. § 102(e) as anticipated by Yang et al., according to the rationale discussed on page 4 of the Office Action. Applicant respectfully traverses this rejection.

Each of the claims is drawn to a different combination of method steps that is patentable over the teachings of Yang et al. In particular, each of independent claims 18, 21, 26, and 38 recites a combination including, among other things, “stopping application of the high-frequency power for biasing before the photoresist film becomes completely removed.”

Yang et al. discloses a method for removing a photoresist layer and polymers layer in the fabrication of a semiconductor device. Yang et al. discloses performing “an in-situ plasma etching step using an additional gas mixed with oxygen (O₂/additional gas)” to strip away the photoresist layer (204) and polymer layer (206). Yang et al., however, does not disclose a method step of “stopping application of the high-frequency power for biasing before the photoresist film becomes completely removed.”

Nevertheless, relying on col. 3, lines 43-45, of Yang et al., the Examiner asserts that “Yang discloses ... eliminating the high frequency bias power before removing the photoresist completely.” Applicant respectfully urges that the Examiner has misinterpreted the teachings of Yang et al. The passage in col. 3, lines 43-50, of Yang et al. reads as follows:

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"As shown in FIG. 2B, the plasma using mixed gas as source has a high ability to remove the photoresist layer 204 and polymer layer 206, and the bias power applied on the wafer can be reduced, and even eliminated. Accordingly, the bombardment of the plasma to the photoresist layer 204 and polymer layer 206 is moderate, and the substrate 200 and oxide layer 202, which are in the opening 208, do not suffer plasma damage." (Emphasis added)✓

Applicant respectfully submits that this passage merely suggests, for example, that due to the mixed source gas' high ability to remove the photoresist layer, the bias power applied on the wafer can be reduced, and even eliminated from the conventional, higher bias power (i.e., as discussed in the "Background of the Invention" section of Yang et al.), so that the substrate and oxide layer do not suffer plasma damage. The benefit of having reduced or no bias power is further discussed in col. 3, lines 50-53, of Yang et al. Thus, Applicant respectfully submits that the Examiner's assertion based on the Examiner's misinterpretation of Yang et al.'s teachings should be withdrawn.

Moreover, even if Yang et al. could be interpreted as teaching the step of "stopping application of the high-frequency power for biasing," there is still no teaching or suggestion of such a step being performed "before the photoresist film becomes completely removed."

At least for these reasons, Yang et al. fails to anticipate claims 18-28 and 38-40. Thus, reconsideration and withdrawal of this rejection is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 103(a)

The Examiner rejected claims 10-17 under 35 U.S.C. § 103(a) as being unpatentable over Yang et al. in view of Nguyen et al., according to the rationale discussed on pages 5-6 of the Office Action. Applicant respectfully traverses this rejection.

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The Examiner asserts that “[s]ince Yang discloses reducing the high-frequency bias power[,] one skilled in the art would have found it obvious to modify Yang by reducing/switching Yang’s high frequency bias power from the first power level to a lower second power level as per Nguyen because Nguyen states that during the step of lowering the bias power the resist covering the dielectric is completely removed.”

First, as discussed above, Yang et al. does not disclose the Examiner’s asserted “reducing the high-frequency bias power.” Therefore, there can be no motivation or suggestion to modify Yang et al.

Moreover, not only is there no suggestion or motivation in Yang et al. or Nguyen et al. to combine or modify the teachings, but also the combination does not show a reasonable expectation of success because it is unclear as to how the via etching method of Nguyen et al. could be incorporated into the in-situ plasma-etching step of Yang et al. For example, each of these two methods uses different gases from one another. More specifically, while Yang et al. uses a particular mixed gas to reduce or eliminate the bias power, Nguyen et al. uses processing gases that are different from Yang et al.’s. Since they use different gases, the asserted phenomenon obtained in Nguyen et al. by switching the bias power does not necessarily take place in the in-situ plasma-etching step of Yang et al.

At least for the reasons set forth above, Applicant respectfully submits that a *prima facie* case of obviousness has not been established and respectfully requests reconsideration and withdrawal of this rejection.

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CONCLUSION


In view of the foregoing amendment and remarks, Applicant submits that the claimed invention is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore requests reconsideration of the application, and the timely allowance of all pending claims 10-28, 32-34, and 38-40.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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